

Memorandum



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PROJECT: Pittsfield SSERC – TO1 W.O. NO.: 20121.001.103

SUBJECT: Top of Bank Sampling Report
DCN GE-042601-AAKY

This memorandum has been prepared to present analytical results and data analysis for soil and sediment samples collected from selected points along the top of bank within the first ½-mile and along the drainage swale (DS-1), all located within the 1½ Mile Reach of the Housatonic River in Pittsfield, Massachusetts. The drainage swale intersects the east bank of the Housatonic River at approximately Transect 74 in the 1½ Mile Reach. Field sampling activities were conducted on February 6 through February 8, 2001. This memorandum includes descriptions of the following:

- Purpose and objectives
- Field sampling procedures and description
- Laboratory analytical procedures
- Analytical results
- Data analysis
- Removal recommendations

The activities described in this plan were conducted in accordance with project-wide and area specific planning documents. These planning documents include the following:

- Project Field Sampling Plan (00-0334)
- Project Health and Safety Plan (HASP) (00-0313)
- Project Quality Assurance Project Plan and Addendum (QAPP) (00-0305)
- Site Specific Health and Safety Plan (00-0475)

Purpose and Objectives

The purpose of this investigation was to supplement existing riverbank soil and sediment data for the first ½ mile of the 1 ½ Mile Reach. The investigation had three primary objectives:

1. Assess PCB concentrations in riverbank soils along the top of bank in areas where previous sampling did not extend to the 980-foot elevation contour,
2. Assess PCB concentrations in bank soils and sediment at depth in the western end of the drainage swale, and
3. Develop soil and sediment removal recommendations based on the newly collected data.

Sampling Locations

The attached figure depicts the locations of the samples collected as part of this effort. Locations BS000154 through BS000167 are located along the 980-foot elevation contour, representing the top of bank in those areas. These locations were selected to correspond to existing transects where the previous sampling did not extend to the top of bank (EPA limit of work).

Locations FL001631 through FL001677 were located along DS-1 in three transects that correspond to existing transects from the initial sampling of the swale in December 2000. Locations FL001633, FL001639, and FL001676 represent sediment locations at the mid-point of the swale, while the remaining locations represent bank soils. These locations were re-sampled to evaluate the extent of PCBs at depth.

Field Sampling and Analytical Procedures

Soil sampling at the top of bank locations was conducted at pre-determined locations on existing transects as described above (see figure). Samples were collected from the following depth intervals:

- 0 to 1 ft bgs
- 1 to 2 ft bgs
- 2 to 3 ft bgs

Sediment sampling locations in DS-1 were located at the center line of the swale. Bank sample locations were located at mid-slope on each side of the swale. Samples were collected from two discrete depth intervals (1 to 2 ft and 2 to 3 ft, bgs).

Sampling protocols were conducted in accordance with the WESTON Field Sampling Plan (12 Mar 1999) for soil sampling (C.32) and sediment sampling (C.30). Refusal was encountered before the design depth could be reached at two locations along DS-1 and at one top of bank location on the river. All sample locations were marked by the field sampling team using survey hub stakes and pin flags. After sampling was completed, sample locations along the river were surveyed by a licensed surveyor. The locations along DS-1 had been surveyed previously.

All soil and sediment samples were analyzed for PCBs at a fixed, off-site laboratory approved by CENAE. QA/QC samples were obtained in accordance with the requirements outlined in the project QAPP and Addendum (00-0305). WESTON conducted data management and data validation of sample analyses in accordance with the procedures outlined in the project QAPP. All analyses were found to meet the Level III data quality objectives as outlined in the project QAPP.

Analytical Results and Data Analysis

A total of 62 samples were analyzed for Aroclors and total PCBs. Table 1 shows the validated analytical results for all samples. The data were broken down into four groupings based on geographic distribution to facilitate analysis. The four groups were as follows:

1. West bank of river between Transects 90 and 96; includes locations BS000164 through BS000167,
2. East bank of river between Transects 92 and 96; includes locations BS000160 through BS000163,
3. East bank of river between Transects 76 and 86; includes locations BS000154 through BS000159, and
4. All drainage swale samples (sediment and soil).

The three groups of riverbank soil data were evaluated by calculating the 95% Upper Confidence Level (UCL) of the arithmetic mean and comparing that value to the bank soil cleanup goal of 10 ppm PCB in the 0 to 1 ft depth interval and 10 ppm in the 1 to 3 ft depth interval. The sediment PCB results from the drainage swale locations were compared to a PCB concentration of 1 ppm. The bank soil data from the drainage swale were evaluated by calculating the 95% UCL and comparing that value to the bank soil cleanup goal of 10 ppm PCB in the 1 to 3 ft depth interval.

West Bank, Transects 90 to 96

Thirteen samples were collected from this area, not including duplicates. The average PCB concentration for all samples was 1.2 ppm and the maximum value was 5.3 ppm. The 95% UCL was calculated to be 8.1 ppm. Thus all of the samples, as well as the 95% UCL, fell below the cleanup goal of 10 ppm.

East Bank, Transects 92 to 96

Eleven samples were collected from this area, not including duplicates. The average PCB concentration for all samples was 32.6 ppm and the maximum value was 150 ppm. The 95% UCL was calculated to be 157.1 ppm PCB. Eight of the eleven samples exceeded the cleanup goal of 10 ppm PCB.

East Bank, Transects 76 to 86

Nineteen samples were collected from this area, not including duplicates. The average PCB concentration for all samples was 93.9 ppm and the maximum value was 1400 ppm. The 95% UCL was calculated to be 5021 ppm PCB. These calculations were dominated by the detection of 1400 ppm PCB at location BS000158. Without that sample, the average drops to 21.4 ppm PCB and the 95% UCL drops to 1004 ppm. All six of the samples from the 0 to 1 ft interval were less than 10 ppm, but only 4 of the 13 samples from the deeper intervals were below the cleanup goal.

Drainage Swale

Eighteen samples were collected from this area, not including duplicates. Twelve of the samples were bank soils and six were sediment samples. Four of the six sediment samples exceeded the cleanup goal of 1 ppm PCBs, with the exception being the 2 to 3 ft samples from locations FL001633 and FL001639. The 95% UCL for the bank soil samples from 1-3 ft depth was calculated to be 7,170 ppm. The maximum value for the drainage swale bank samples from 1-3 ft depth was 220 ppm.

Summary and Recommendations

Riverbank Samples

The riverbank soil data were subdivided into three geographic groups to facilitate evaluation. Analysis of the riverbank soils data indicates that riverbank soils exceed the cleanup goal of 10 ppm in all areas tested, except the west bank of the river between Transects 90 and 96, where all top of bank samples, as well as the 95% UCL, were less than 10 ppm.

Drainage Swale Samples

The 95% UCL and maximum result from the bank soil samples in the drainage swale from 1-3 ft depth both exceeded 10 ppm PCB. Comparison of the drainage swale sediment samples to a PCB concentration of 1 ppm indicated that only samples from 2-3 ft at locations FL001633 and FL001639 did not exceed 1 ppm PCB.

The following additional sampling is recommended based on the new data:

- Conduct bank soil sampling and analysis for PCBs on the west bank at Transects 88, 90, 92, 94, and 96 at an elevation of approximately 977 feet. Obtain samples for PCB analysis from depths of 0-1', 1-2', and 2-3'. The purpose of this sampling is to determine an elevation in this area that can be documented as below 10 ppm, thus allowing for the limit of excavation to be moved further down the bank. No samples were previously obtained on the west bank at Transect 88 due to access and sampling difficulties. An additional attempt to obtain soil data from this location is recommended.
- Obtain additional samples for PCB analysis from an aggrading bar area in the vicinity of Transect 82. Samples would be obtained at two locations in the aggrading bar from depths of 2-3', 3-4', 4-5', and 5-6'. This aggrading bar was not previously sampled below 2 ft.